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ABSTRACT

The use of contextualized learning environments with learners who are at risk of school failure arises from the recognition that students who are introduced to concepts and strategies out of a meaningful context will view them as irrelevant to daily life. Contexts created by teachers using videotape and random access videodisc technologies have three advantages: (1) they provide rich sources of information with opportunities to notice various images, features, issues, and problems; (2) they enable students to perceive dynamic moving events; and (3) they allow students to develop skills of pattern recognition related to visual and auditory cues. Anchored instruction projects at Vanderbilt's Learning Technology Center have examined the effectiveness of shared contextualized learning environments in promoting learning. One study showed that a group of preschool children who viewed a videodisc of a story learned much more than a group who heard the same story read aloud. A second project found that fifth grade students who received instruction in the language arts and social studies within the context of a movie were much more likely to use the new vocabulary, writing skills, and historical information that was presented than students who received the same instruction without the video anchor. Data from such projects offer an opportunity to merge recent knowledge about cognition, instruction, and culture with video technology to develop instructional systems that can make significant improvements in the way the teaching and learning process for at-risk students is carried out in the schools. (9 references) (BBM)

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ENHANCING LEARNING IN AT-RISK STUDENTS: APPLICATIONS OF VIDEO TECHNOLOGY

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ERIC DIGEST

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Enhancing Learning in At-Risk Students: Applications of Video Technology

Cognition and Technology Group *
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Most educators today agree that we have a serious problem with respect to learners who are at risk of school failure. The purpose of this digest is to explore some possible uses of video technology that have been shown to be effective for enhancing learning in at-risk students.

Learning and At-Risk Students

It is extremely difficult to define who is at risk and who is not because being at risk is not related to a single cause, but rather to what Mann (1986) refers to as a "nesting of antecedent problems." However, most agree that at-risk learners are generally low achievers.

One reason for at-risk students' difficulty with learning is that much of current instruction for these students is remedial and is focused on transferring information in the form of facts and procedures. Unfortunately, information presented as facts is then stored as facts, and for most students it is not recognized as knowledge to be used to solve problems. The consequence is that the facts remain inert and often are not spontaneously used in problem solving situations (Bransford, Sherwood, Hasselbring, Kinzer, & Williams, in press; Whitehead, 1929). Indeed, findings from the National Assessment of Educational Progress (Dossey, Mullis, Lindquist, & Chambers, 1988) indicate that American students have significant difficulties in reasoning and in putting what they have learned in school to use in solving problems. It appears that our present system of formal education is doing a rather poor job of attaining this goal, especially with students who are at risk for school failure.

Shared Learning Environments and the Role of Video Technology

The concept of contextualized learning environments arises out of the recognition that students, particularly at-risk students, who are introduced to concepts and strategies out of a meaningful context will view them as irrelevant to daily life. Much of the work at Vanderbilt University's Learning Technology Center over the past five years has examined the use of shared contextualized learning environments and the effect of these environments on learning.

It appears that children often learn well when they and a mediator share a context or event that can be mutually explored (Feuerstein, Rand, Hoffman, & Miller, 1980). For example, Sherwood, Kinzer, Bransford, and Franks (1987) note that mediators, such as parents, siblings, peers, and other adults, can arrange the environment so that learners will encounter certain experiences. They can also help learners separate relevant from irrelevant information and connect present experiences with previous knowledge. Finally, mediators monitor the performance of learners to encourage as much independent performance as possible.

In the classroom, teachers play the role of mediator and try to help students relate new information to previously acquired knowledge. The teachers, however, often do not know which experiences are relevant for a particular child. This is a situation in which technology such as videotape and random access videodisc becomes especially valuable. With these tools teachers can create contexts that teachers and children can share. Video technology may not substitute for hands-on activities in various real world contexts; however, in some situations video is even superior to a field trip to the grocery store or zoo because the video can be replayed and reviewed as often as necessary.

Bransford et al., (in press) note three advantages to the use of video-based contexts. First, they provide rich sources of information with opportunities to notice sensory images, dynamic features, relevant issues, and inherent problems. Second, they give students the ability to perceive dynamic moving events and to more easily form rich mental models. This advantage is particularly important for lower achieving students and for students with low knowledge in the domain of interest. Third, video allows students to develop skills of pattern recognition which are related to visual and auditory cues rather than to events labeled by the teacher. In sum, video images are ideal for creating a common experience for the teacher and learner that can be used for "anchoring" new knowledge.

Video Applications for At-Risk Students

Several anchored instruction projects have been conducted at the Learning Technology Center and have shown definite advantages for learning in students considered to be at risk of school failure. Following are short descriptions of two of these projects.

Anchored Instruction in the Preschool. Johnson's 1987 study of preschoolers who were considered at risk was designed to ask whether story comprehension could be improved if students had the opportunity to experience the story within a rich, video-based context. He divided the at-risk students into two groups. He read the beginning of a simplified version of *Swiss Family Robinson* to one group and showed the other group a videodisc of the same part of the story.

Johnson found that both groups learned from the story; however, the videodisc group learned far more. In the text-only condition, students had to use their imagination to understand such things as the force that a storm must generate to smash a huge sailing ship upon rocks. Most of the students in Johnson's study, however, did not have the background experience or knowledge to imagine this. They had no experience with storms on the ocean, huge waves, or large sailing ships. The teacher could only describe what it must have been like for the Robinson family. By contrast, the video group could experience the storm vicariously through the video. The teacher was able to anchor new knowledge and understanding of storms, waves, and sailing ships by revisiting the video.

The Young Sherlock Project. A second anchored instruction project was designed using the movie *The Young Sherlock Holmes* as the anchor for learning. This project was conducted in fifth grade classes and designed to help students learn language arts and social studies content. The experimental group, comprised of both at-risk and average ability students, received instruction within the context of *The Young Sherlock Holmes*. The matched comparison group received the same information without the benefit of the video anchor.

The study showed that the students in the anchored group were much more likely to use new targeted vocabulary spontaneously than students in the comparison group. Furthermore, the results of the studies on writing showed that the stories written by the anchored instruction group contained many story elements and their plots were more likely to link character actions and events to goal statements and goal resolution (Risko et al., 1989). Finally, students in the anchored group were much more likely to use historical information to make inferences about the motives of characters in other turn-of-the-century stories they read and videos they saw (Kinzer & Risko, 1988).

The data from these projects, and others that are being conducted across the country, offer an opportunity to merge recent knowledge about cognition, instruction, and culture with video technology to develop instructional systems that can make significant changes in the way the teaching and learning process for at-risk students is thought about and carried out in the schools. It must be emphasized, however, that it is the merging of information from these disciplines with technology that can make a difference, not the technology itself.

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